Lindsay Cheng

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Education

University of Toronto St. George — Toronto, ON
*BASc Computer Engineering + **PEY Co-op** | **3.90/4.0 cGPA*** — *Expected April 2030*
Awards & Honors: First Year Summer Research Fellowship (2025)

Experience

University of Toronto Aerospace Team (UTAT) - Space Systems — Sep 2025 – Present
Software Developer, Attitude Determination & Control Systems (ADCS) — *Toronto, ON*

- Built Python control system for Helmholtz cage satellite ground testing, supporting 50+ test sessions
- Implemented 7-component orbital simulation pipeline with SGP4 propagation to generate 3D magnetic field vectors for hardware-in-the-loop testing
- Led troubleshooting and post-test debugging by developing an automated logging infrastructure for 10+ telemetry parameters

Green Technologies Lab (University of Toronto) — May 2025 – Aug 2025
Materials Science Engineering Research Intern — *Toronto, ON*

- Improved Phase Change Material (PCM) thermal conductivity by 10% for EV battery applications using novel biochar composites
- Developed calcium-catalyzed pyrolysis process achieving 10% faster thermal response at 200°C lower processing temperature
- Automated Raman spectroscopy analysis using Python, processing 100+ biochar samples and reducing manual analysis time by 80%

Projects

ClearMark | *Swift, Node.js, Express, PostgreSQL, Google OAuth* | *Link*

- Translated user requirements for AI grading into a responsive iOS application, adhering to Apple design principles
- Implemented secure authentication using Google OAuth 2.0 and designed MVVM architecture with RESTful API integration
- Deployed Node.js backend on Render with PostgreSQL database, handling file uploads to Cloudflare R2 via CI/CD

Water Bottle Defect Detection System | *Python, YOLOv8, OpenCV, SQLite, Tkinter* | *Link*

- Built automated quality control system using YOLOv8 + OpenCV, with a Tkinter monitoring dashboard and SQLite logging
- Collected and annotated 300+ images across 4 defect classes to train/validate a YOLOv8 object detection model
- Implemented per-bottle ID assignment with a centroid-based tracker

Reversi Game Bot | *C* | *Link*

- Implemented minimax engine with alpha-beta pruning in C, achieving 800ms move decisions at 7-ply search depth
- Designed heuristic evaluation with position weighting and mobility analysis, improving win rate by 20% over baseline model

Send | *Swift, YOLOv8, OpenCV, FastAPI, MongoDB* | *Link*

- Built social bouldering iOS app, integrating YOLOv8 hold detection and pathfinding algorithm, processing wall images in under 2 seconds
- Deployed FastAPI backend with ArUco marker calibration for camera calibration

Skills

Languages: Python, C/C++, Swift, MATLAB, JavaScript, HTML, CSS
Technologies: React, Node.js, Express, PostgreSQL, FastAPI, MongoDB, SQLite, Ultralytics, OpenCV, PyTorch
Tools & Platforms: Git, GitHub, Render, Postman, Excel, Cloud Computing (Render/Cloudflare R2)
Concepts: Data Structures, Microservices, SDLC, Test Driven Development, User Requirements Analysis
Focus Areas: Computer Vision, Mobile App Development, Machine Learning, Quality Assurance